



FACE 2 FACE

UMAT PREPARATION

CENTRE

PAPER 1

Directions to candidates.

1. Attempt all questions
2. All questions are of equal value
3. No marks will be deducted for a wrong answer
4. If you mark more than one answer it will be considered wrong
5. Time each section, you can not go over the allocated time
6. You can not go back to a section once the time is up

Section 1

This paper has 44 multiple choice questions to be done in 65 minutes.

Section 2

This paper has 36 multiple choice questions to be done in 45 minutes.

Section 3

This paper has 30 multiple choice questions to be done in 40 minutes

Section 1 – Logical Reasoning and Problem Solving

Questions 1-3 refer to the following article.

Vinaver's Theory

Brendan O'Connor

Vinaver's theory stating that Malory's eight romances, which were earlier thought to be fundamentally unified, were in actuality eight independent works, produced both a sense of relief and an unpleasant shock. His theory conveniently did away with the apparent contradictions in chronology and consequently made each romance independently satisfying. What some found disagreeable was that, what was initially presumed to be one book was now eight books. Part of this response was the natural reaction to the disturbance of set ideas. Even after lengthy consideration of the theory's legitimate observations, it is not possible to avoid the conclusion that the eight romances are only one work. It is not quite a matter of a disagreement with the theory of independence, but of a rejection of its implications that the eight romances can be looked at in any or no particular order, that they have no cumulative effect, and that they are distinct and divided like the works of any modern or post-modern novelist.

1. According to the passage the author believes which of the following statement(s) regarding Malory's works?

- I. Malory creates meaningful links between the romances.
- II. When considered to be one work, the subtleties of the romances are obscured.
- III. The overall unity of the romances is more important than any contradictions in chronology.

- a) I only
- b) I and III only
- c) II and III only
- d) I, II and III

2. From the below mentioned statements, which statement does the author agree with regarding Vinaver's theory?

- a) Vinaver's theory presents a very clear understanding of the unity of Malory's romances.
- b) The theory illustrates the irrationality of visualizing Malory's romances as unified.
- c) An acceptable link is established between Malory's romances and modern novels.
- d) Very valid and subtle comments regarding Malory's romances are made in Vinaver's theory.

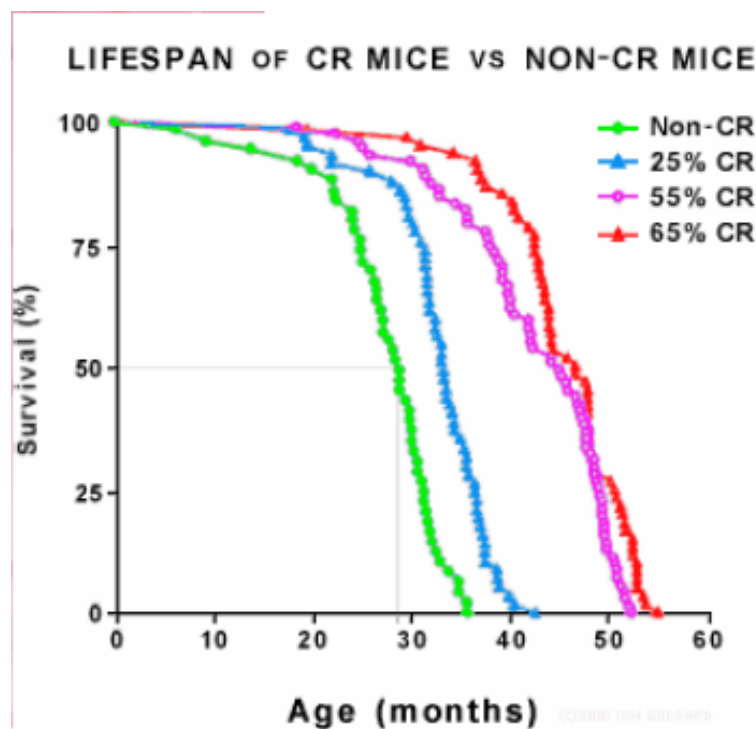
3. According to the passage some critics, while evaluating Vinaver's theory, were:
- Often misled by the discrepancies in Malory's work.
 - Leaning towards previous interpretations of Malory's work.
 - Conceptually displeased by the general interpretation that Vinaver rejected.
 - On the whole in agreement with Vinaver's comparisons between Malory and modern novelists.
4. There are 8.7 million millionaires according to a recent study. Half of the world's millionaires reside in the US, a quarter in Europe and one-eighth in Asia. The projected total wealth of the world's millionaires is \$44 trillion by 2010.

We can conclude that

- More than 4 million millionaires were born in the US.
- Less than 1 million millionaires were born in Europe.
- The projected wealth of the world's millionaires in 2010 is about 5 million times their current wealth.
- The projected wealth of the world's millionaires in 2010 is about 5 times their current wealth.

Questions 5-6 refer to the following graph.

Calorie restriction is the practice of limiting dietary energy intake to improve health and retard aging. The graph below shows a calorie restriction experiment in mice that compares the maximum lifespan of CR mice and non-CR mice:



*CR = Calorie Restriction

5. The above graph shows that
- Mice with the highest percentage of calorie restriction increase their maximum lifespan the most.
 - Mice with the highest percentage of calorie restriction increase their average lifespan the most.
 - Rats with the highest percentage of calorie restriction increase their average lifespan the most.
 - Humans can extend their maximum life span if they follow calorie restriction practices.
6. It's also demonstrated in the graph that
- At 28 months, the survival rate of non-CR mice is higher than those in 25% CR mice.
 - At 48 months, the survival rates for 55% and 65% CR mice are the same.
 - The difference between the survival rates of 25% and 55% CR mice is about 20% at 25 months.
 - All of the 65% CR mice survived past 40 months.
7. Unrestrained whale hunting, which began in the 1600s and became industrialized in the 19th century, had sent many species into serious decline. Environmental groups, fearing that the whales would become extinct, lobbied hard to bring the hunting and killing to a halt. In 1986 they came very close: the International Whaling Commission (IWC) voted to prohibit whaling, allowing it only for scientific purposes or, in a handful of cases, such as among native peoples in Alaska and Greenland, to preserve ancient food-gathering practices.

According to the passage, which of the following whale-hunting practices is allowed by the IWC?

- Native Australians hunting whales to preserve ancient food-gathering practices.
- Japan hunting hundreds of whales for scientific purposes.
- Norway hunting whales to provide food for its citizens.
- Natives in Alaska and Greenland hunting whales for fun.

Questions 8-9 refer to the following information.

Discovery of Radioactivity

Radioactivity was first discovered in 1896 by the French scientist Henri Becquerel while working on phosphorescent materials. These materials glow in the dark after exposure to light, and he thought that the glow produced in cathode ray tubes by X-rays might somehow be connected with phosphorescence. So he tried wrapping a photographic plate in black paper and placing various phosphorescent minerals on it. All results were negative until he tried using uranium salts. The result with these compounds was a deep blackening of the plate.

However, it soon became clear that the blackening of the plate had nothing to do with phosphorescence because the plate blackened when the mineral was kept in the dark. Also non-phosphorescent salts of uranium and even metallic uranium blackened the plate. Clearly there was some new form of radiation that could pass through paper that was causing the plate to blacken.

8. It can be inferred from the above experiment that
- Radioactivity caused the phosphorescence of uranium salts.
 - Phosphorescence is independent of radioactivity.
 - A photographic plate whitens when radioactive salts are placed on top of it.
 - Radioactive salts emit X-rays.
9. Becquerel's experiment shows that non-phosphorescent salts of uranium
- Are not radioactive.
 - Are the same as metallic uranium.
 - Can emit radiation just like phosphorescent salts of uranium.
 - Are weaker emitters of radiation compared to phosphorescent salts of uranium.

Refer to the following passage for Questions 10-12

Four students (Anthony, David, Keira and Lisa) each checked their timetable for classes the next day. Each student had one subject on, ranging from Maths to English, Chemistry or Japanese non-respectively, and each subject was taught in different rooms around the school (M5.1, L1.1, P2.3 or B3.1 non-respectively). Further, the times of each class varied from 8:00am to 10:00am, 12:00pm or 1:00pm non-respectively.

It is known that:

- Chemistry is conducted in B3.1
- A class is held in M5.1 at 8:00am
- Keira has Japanese
- Lisa has a class at 1:00pm, and it was not Maths
- Maths is taught at 10:00am, and not held in P2.3
- David's class is in P2.3

10. Which of the following can be concluded?

- There is a class in B3.1 at 1:00pm
- Anthony has a class at 12:00pm
- Lisa has Maths
- Chemistry is not conducted at 1:00pm

11. We **CANNOT** conclude that

- Lisa has a class in B3.1 at 1:00pm
- Keira has Japanese at 8:00am
- Japanese is conducted in M5.1 at 12:00pm

d) Maths is taught in L1.1 at 10:00am

12. Which of the following is correct?

- a) Japanese is not conducted in M5.1 but in L1.1
- b) Chemistry is not taught at 1:00pm but at 11:00am
- c) There is not a class at 10:00am in L1.1
- d) Anthony does not have a class at 8:00am but has a class at 10:00am

13. Fred, Alistair, Maggie and Bob run a 500 metre lap. In the time Bob takes to finish the race, Alistair has only run 300 metres. When Maggie has finished the race, Fred has run 444.44 metres. When Alistair finishes the race, Maggie would have been halfway through her second lap if she kept on running.

When Bob finished the race, how far was he ahead of Fred?

- a) 50 metres
- b) 75 metres
- c) 100 metres
- d) 150 metres

Questions 14-15 refer to the following table.

Hepatitis Viruses

Hepatitis virus	genomic material	trans-mission	incubation period*	mean (days)	chronic infection	virus classification [#]
A	RNA	Enteric	2-6 weeks	30	No	Picomavirus
B	DNA	Parenteral	1-6 months	112	Yes	Hepadnavirus
C	RNA	Parenteral	1-5 months	49	Yes	Flaviviridae
D	RNA	Parenteral	2-6 weeks	21 ^a	Yes	Unclassified satellite virus
E	RNA	Enteric	3-6 weeks	38	No	Calicivirus-like

^a If HBV positive
* The incubation period is dose dependent, a larger dose results in a reduced incubation period
[#] Actual or proposed

14. According to the table above,

- a) Hepatitis B virus is the only DNA virus amongst the 5 hepatitis viruses.
- b) Hepatitis A and D are transmitted parenterally.
- c) The incubation period for Hepatitis C tends to be longer than Hepatitis D.
- d) Only Hepatitis A won't develop into chronic infection.

15. Which of the following can we NOT conclude from the table?

- a) The five hepatitis viruses are different viruses.
- b) Hepatitis D only develops when a patient already suffers from Hepatitis B.

- c) Hepatitis viruses transmitted enterically do not develop into chronic infections.
- d) Flaviviridae is responsible for Hepatitis C.

16. Theodore Roosevelt was the 26th president of the United States of America. He came to believe that government had the right to moderate the excesses of free enterprise. Although his exercises of power seem modest to us now – the break up of monopolies, the Pure Food and Drug Act, the meat-inspection and industrial-safety laws – it was a shock to the system at the time. Roosevelt insisted that one of the things government must govern is the economy.

It CANNOT be concluded from the above that

- a) Roosevelt was against free enterprise and believed that a market economy was not in the best interests of the American people in his time.
- b) Roosevelt was a revolutionary in his time.
- c) The 26th US president believed that the government has the right to break up monopolies.
- d) Roosevelt believed that the government must not just let free enterprise run its course.

17. There's been recent controversy surrounding the new Adidas Teamgeist – the World Cup football. Goalkeepers claimed that the ball “flutters” and “wobbles”. Adidas, on the other hand, fiercely defends its product, claiming that the increased number of fluctuations – what looks like fluttering or wobbling – allows the ball to ‘correct’ itself before reaching its target, which results in a more consistent shot. David James, a Sheffield engineer, asks the key question: “How much is it in the ball and how much is it in the players?” Just as Brazilians are credited with first getting a football to bend in the 1950s, today's generation of strikers may have figured out a new way of tormenting goalkeepers – but this time with shots that have no spin at all.

It is true from the passage that

- a) Shots that have no spin at all are harder to defend than those that do spin.
- b) The Adidas Teamgeist is likely to be modified for the next World Cup if complaints from goalkeepers continue.
- c) Today's generation of strikers have found out a way to make footballs wobble as they approach the goal.
- d) There are a number of theories to why the motion of the Adidas Teamgeist is perceived as strange by goalkeepers.

Questions 18-20 refer to the following article.

History of Spontaneous Generation

David Lehman, Scientific America, 13/06/2006

In 1745 - 1748, John Needham, a Scottish clergyman and naturalist showed that microorganisms flourished in various soups that had been exposed to the air. He claimed that there was a “life force” present in the molecules of all inorganic matter, including air and the oxygen in it, that could cause spontaneous generation to occur, thus accounting for the presence of bacteria in his soups. He even briefly boiled some

of his soup and poured it into “clean” flasks with cork lids, and microorganisms *still* grew there.

A few years later (1765 - 1767), Lazzaro Spallanzani, an Italian abbot and biologist, tried several variations on Needham’s soup experiments. First, he boiled soup for one hour, and then sealed the glass flasks that contained it by melting the mouths of the flasks shut. Soup in those flasks stayed sterile. He then boiled another batch of soup for only a few minutes before sealing the flasks, and found that microorganisms grew in that soup. In a third batch, soup was boiled for an hour, but the flasks were sealed with real-cork corks (which, thus, were loose-fitting enough to let some air in), and microorganisms grew in that soup. Spallanzani concluded that while one hour of boiling would sterilize the soup, only a few minutes of boiling was not enough to kill any bacteria initially present, and the microorganisms in the flasks of spoiled soup had entered from the air.

This initiated a heated argument between Needham and Spallanzani over sterilization (boiled broth in closed vs. open containers) as a way of refuting spontaneous generation. Needham claimed that Spallanzani’s “over-extensive” boiling used to sterilize the containers had killed the “life force.” He felt that bacteria could not develop (by spontaneous generation) in the sealed containers because the life force could not get in, but in the open container, the broth rotted because it had access to fresh air, hence the life force inherent in its molecules, which contained and replenished the life force needed to trigger spontaneous generation. In the minimally-boiled flasks, he felt the boiling was not severe enough to destroy the life force, so bacteria were still able to develop. By 1860, the debate had become so heated that the Paris Academy of Sciences offered a prize for any experiments that would help resolve this conflict.

18. In Needham’s experiment, he poured soup into “clean” flasks with cork lids to show that

- a) Microorganisms still grew in the soup despite being in a “clean” and sealed environment.
- b) The “life force” is present in air molecules.
- c) The soup originally contained bacteria, before being poured into the “clean” flasks.
- d) Only the “clean” flasks contained the “life force”.

19. Spallanzani conclusively demonstrated in his experiment that

- a) Spontaneous generation is invalid. There is no such thing as the “life force”.
- b) Spontaneous generation is valid. The existence of the “life force” was proven.
- c) A few hours of boiling were not enough to kill any bacteria initially present in the soup.
- d) None of the above.

20. Needham thought that Spallanzani's experiment did not go contrary to his theory of the "life force" because he claimed that

- a) Bacteria could not develop (by spontaneous generation) in the sealed containers because the life force could get in.
- b) Spallanzani's extensive boiling used to sterilize the containers had killed the "life force."
- c) In the open container, the broth rotted because it did not have access to fresh air.
- d) In the minimally-boiled flasks, the boiling was severe enough to destroy the life force, so bacteria were still able to develop.

Questions 21-23 refer to the following excerpt of the previous article – "History of Spontaneous Generation".

In 1864, Louis Pasteur claimed the prize money and published the results of an experiment he did to disprove spontaneous generation in microscopic organisms. He used flasks of broth, as above, but did not seal any of them. Rather, he used flasks with S-shaped necks or blocked with cotton to allow fresh air (hence any "life-force") to enter, yet keep out any microbes that might be in the air. Based on his results, Pasteur concluded that there is no such life force in air, and organisms, large or small, do not arise by spontaneous generation in this manner.

Below were the details of his experiment:

Testing: Broth was boiled in various-shaped flasks to sterilize it. As the broth and air in the containers cooled, fresh room air was drawn into the containers. None of the flasks were sealed — all were exposed to the outside air in one way or another. **Control group** — Some flasks opened straight up, so not only air, but any bacteria present in that air, could get into them. **Experimental group(s)** — Some flasks had long, S-shaped necks (swan-neck flasks) and others were "closed" with cotton plugs. This allowed air to enter these flasks, but the long, swan neck or the cotton balls filtered out any bacteria present in that air. The long necks were subsequently broken off some of the swan-neck flasks. **Replication** — Several flasks were used in each of the groups.

Data: Broth in flasks with necks opening straight up spoiled (as evidenced by a bad odour, cloudiness in previously clear broth, and microscopic examination of the broth confirming the presence of bacteria), while broth in swan-neck flasks did not, even though fresh air could get it. Broth in flasks with cotton plugs did not spoil, even though air could get through the cotton. If the neck of a swan-neck flask was broken off short, allowing bacteria to enter, then the broth became contaminated.

21. We CANNOT conclude from Pasteur's experiment that

- a) There is no life force in air.
- b) Large amounts of cotton fibres can not be impermeable to air.
- c) Boiling water contaminated with microorganisms is typically cloudy and has a bad odour.
- d) Organisms do not arise by spontaneous generation.

22. The purpose of having the control group is to

- Compare the swan-neck flasks with normal flasks.
- Determine what would happen if air and bacteria had access to the broth in the flasks.
- Test how long it would take for the broth to be spoilt.
- Compare the experimental groups with their replications.

23. In Pasteur's opinion,

- Spontaneous combustion was an invalid theory.
- The implementation of the swan-neck flasks was the most ingenious aspect of his experiment.
- Large organisms, such as humans, do not arise by spontaneous generation.
- Breaking the necks of the swan-neck flasks would not change the results of the experiment.

Questions 24-26 refer to the following graph.

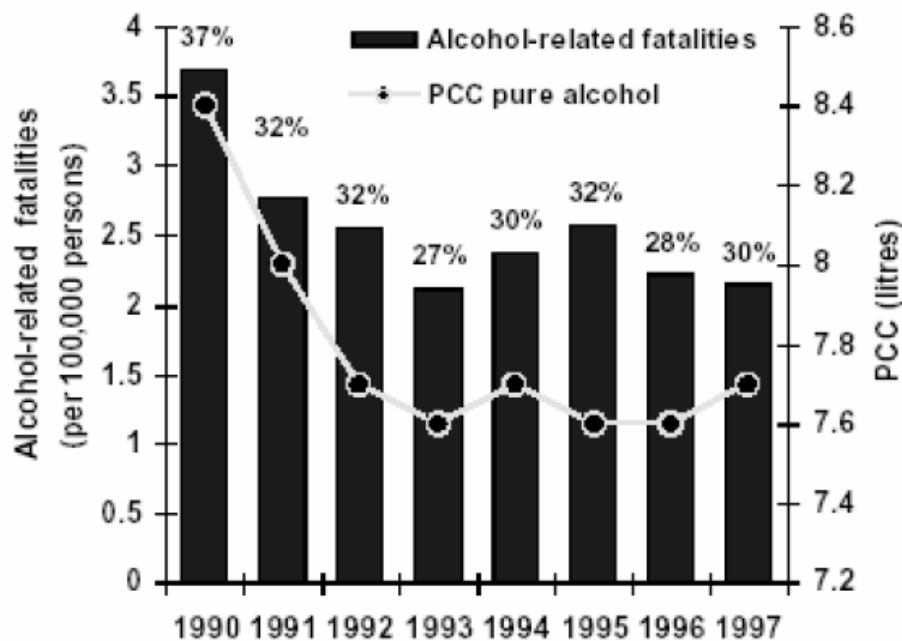


Figure 1: Estimated rate of Australian alcohol-related driver/pedestrian fatalities (per 100,000 persons), proportion of all driver/pedestrian fatalities estimated as alcohol-related(%) and per capita alcohol consumption⁹.

24. The graph shows that

- In 1990, 37 000 Australian drivers/pedestrians died due to alcohol use.
- More Australian drivers/pedestrians died in an alcohol-related incident in 1995, compared to 1993.
- In 1992, the proportion of alcohol-related fatalities in Australia decreased compared to the previous year.
- The lowest proportion of all driver/pedestrian fatalities estimated as alcohol-related in Australia was in 1993.

25. The per capita alcohol consumption in Australia

- a) Was stagnant between 1993 and 1996.
- b) Decreased by about 8% between 1990 and 1992.
- c) Was 8 litres in 1990.
- d) Increased 0.2 litres between 1993 and 1994.

26. We can conclude from the above graph that

- a) A decrease in per capita alcohol consumption is solely responsible for a decrease in alcohol-related fatalities in Australia.
- b) In 1998, there was a slight increase in alcohol-related fatalities in Australia.
- c) The proportion of all driver/pedestrian fatalities estimated as alcohol-related is not related to alcohol consumption.
- d) Between 1990 and 1994, per capita alcohol consumption is proportional to alcohol-related fatalities in Australia.

27. In the US, there are 884,974 physicians. They can become board-certified in 24 general areas and 88 subspecialties. In 2004, there were 24,040 general certificates and 7651 subspecialty certificates.

If 75% of American adults surveyed said they prefer board-certified physicians to doctors recommended by family or friends, then

- a) 25% of 884,974 physicians in the US don't have a stable income.
- b) 75% of 24,040 board certified physicians in general areas are preferred by the American public.
- c) More than 75% of US physicians are not board-certified.
- d) Less than 25% of physicians recommended by family or friends are board-certified.

28. The proposed retirement age in Niger is now 60 years, an increase from the current age of 55. The government's proposal is an attempt to curb the loss of experienced workers in one of Africa's poorest nations. The average life expectancy in Niger, however, is only 42 years.

We can infer from the above that in Niger,

- a) The majority of people will not be able to retire.
- b) On average, Nigerian women are more likely to reach the age of 55 than their male counterparts.
- c) There's a workforce problem as the 'baby boomers' generation will soon retire, but there aren't enough young workers to support them.
- d) The proposed increase in retirement age will be irrelevant because the average life expectancy of 42 years is lower than the previous retirement age of 55 anyway.

Refer to the following passage for Questions 29-31

A1, A2, A3 and A4 all decided to buy a new pair of shoes for themselves. The different brands they bought were Nike, Reebok, Adidas and Puma non-respectively, and they ranged in colour from blue to red, orange and black non-respectively. Further, each pair of shoes varied in price - \$100, \$120, \$150 and \$170 non-respectively.

It is known that:

- The Adidas shoes are black
- The blue shoes cost \$100
- A4 spent \$170, and did not buy Nike shoes
- The Nike shoes cost \$120 and are not orange
- A2 bought orange shoes
- A3 bought Puma shoes

29. It CANNOT be concluded that

- a) The black Adidas shoes cost \$170
- b) A3 spent \$100 on a pair of blue shoes
- c) A1 spent \$120 on a pair of red shoes
- d) The orange Reebok shoes cost \$100

30. We can conclude that

- a) A3 bought blue Reebok shoes
- b) The orange shoes cost A2 \$150
- c) The Puma shoes are red
- d) A1 bought Reebok shoes that cost \$120

31. Which of the following is incorrect?

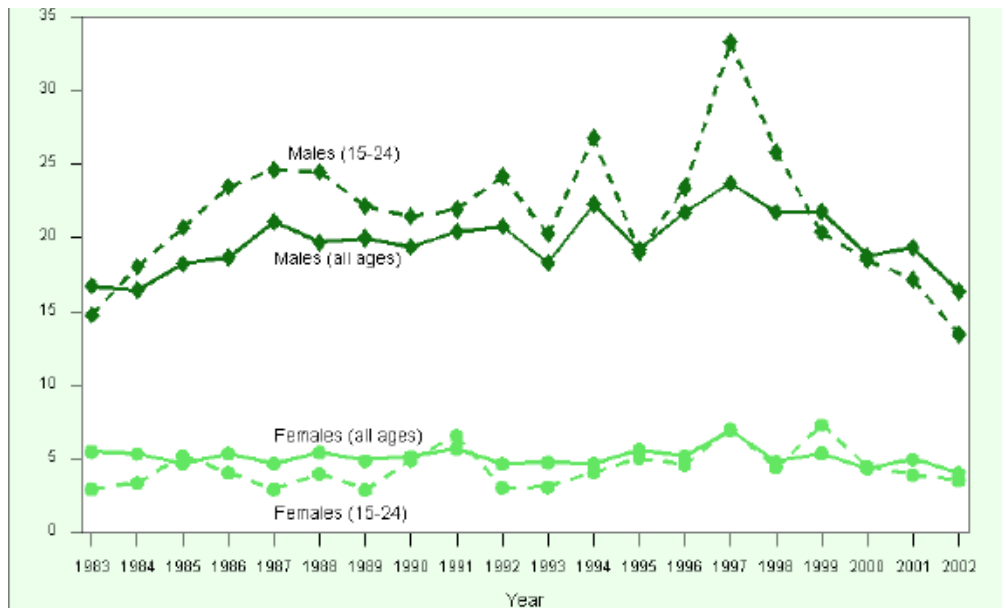
- a) A4's black shoes did not cost \$170
- b) A1 did not spend \$150 on a pair of red shoes
- c) A3 did not buy the red shoes for \$100
- d) The Puma shoes did not cost A3 \$170

32. Some would have you believe that the economic problems of Western Europe in the 1980s were caused by the Organisation of Petroleum Exporting Countries (OPEC) oil cartel. This is nonsense. After all, Great Britain was not dependent on OPEC oil and yet Great Britain suffered from the same economic problems that affected France and West Germany.

The author's point is made primarily by

- a) Offering Great Britain as a counter example.
- b) Analysing the economic difficulties of France and West Germany.
- c) Pointing out a misconception of reasoning.
- d) Proposing an alternative explanation.

Questions 33-35 refer to the following graph of suicide and self inflicted injury in NSW from 1983-2002 (NB Vertical axis rate is per 100 000).



33.

According to the graph above, in NSW

- The rate of suicide and self-inflicted injury deaths for young males has decreased since 1999.
- Males of all ages are more likely to commit murder than females.
- The increasing level of suicide and self-inflicted injury deaths in the 1990's has prompted government action in 2000.
- The number of young females committing suicide increased between 1989-91.

34. Which of the following statement(s) would explain the discrepancy between male and female rates of suicide and self-inflicted injury deaths?

- Males like to engage in risk-taking behaviours more than females.
- Males tend not to express their feelings and emotions, contributing to higher incidences of mental disorders, compared to females.
- More females are murdered than die from suicides and self-inflicted injuries.

- I only
- I and II
- I and III
- I, II and III

35. We CANNOT conclude from the graph that

- In 1997, there was an increase in mental disorders amongst young males, hence the dramatic increase in the rate of suicide and self-inflicted injury deaths.
- The rate of suicide and self-inflicted injury deaths of males of all ages are higher than the female rate between 1983 and 2002.

- c) In 1989, about 5 per 100 000 females died due to suicide and self-inflicted injury.
- d) If the female population in NSW did not change between 1986 and 1988, the number of females who died due to suicide and self-inflicted injury would be about the same.

36. A robber recently burgled some of the shops in the neighbourhood, and the police are interviewing three eye-witnesses who all claim to have seen the robber. However, from past experience, the police know that each of the witnesses is telling one truth and one lie in any order.

Tom said: "The robber was wearing a blue balaclava and a jacket."

Tim said: "He had a black balaclava and was wearing a shirt. I'm sure of it."

Rich said: "He wasn't masked. But boy he could run fast."

Which of the following descriptions cannot be inferred from the above statements?

- a) The robber did not wear a balaclava, and wore a shirt.
- b) The robber wore a blue balaclava, and wore a shirt.
- c) The robber wore a black balaclava, and wore a jacket.
- d) The robber wore a jacket, and could run fast.

37. Consider the following statements:

- i. People can be fooled.
- ii. Some people can be fooled all of the time.
- iii. All people can be fooled some of the time.

If the above statements are true, which of the following must also be true?

- a) Some people can never be fooled.
- b) If you are fooled, you are fooled most of the time.
- c) All people cannot be fooled some of the time.
- d) Some people can be fooled some of the time.

38. A whistle-blower is no hero, at least not to the Chinese government. In March, Chen Guangchen, a blind activist who publicised an illegal campaign of forced sterilizations and abortions, was removed from house arrest and taken away by police. Chen's whereabouts were unknown until June 11, when officials confirmed he was in jail. The odd charges against him include "gathering a crowd to disrupt traffic."

We can infer from the above that

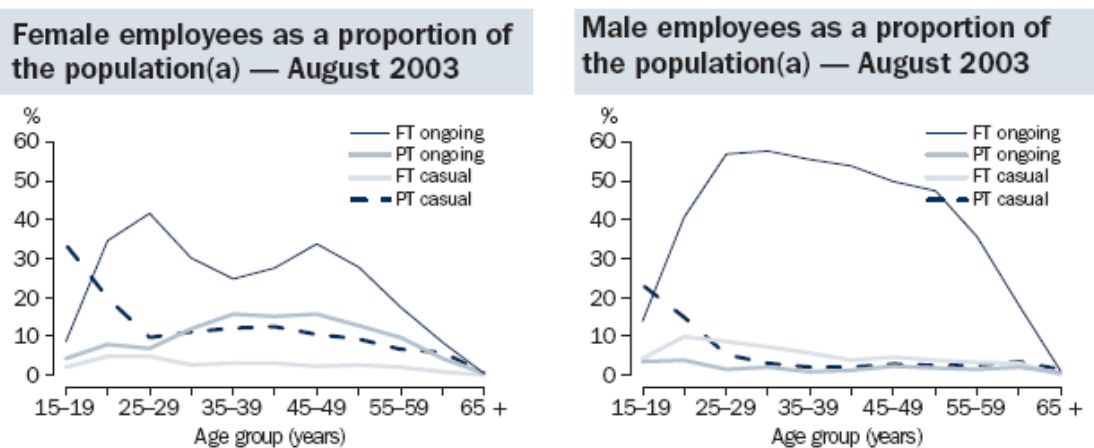
- a) Chen offended the Chinese government by "gathering a crowd to disrupt traffic".
- b) The oppressive Chinese government will one day be brought down by democracy.
- c) Chen was placed under house arrest for whistle-blowing.
- d) Chen was arrested and put in jail on June 11.

39. A recent study published in the Wall Street Journal showed that there's a 1% chance of a child born poor in the US of becoming rich as an adult. On the other hand, there's a 22% chance of a child born rich in the US of staying rich as an adult.

Therefore,

- Elitism in the US is the major contributor to such discrepancies in the statistics above.
- 1 in 100 children who are born poor will have 1% chance of becoming rich as an adult in the US.
- A child born rich is 22 times more likely to be rich in adulthood than a child born poor in the US.
- There are 22 times more rich adults than poor adults in the US.

Questions 40-41 refer to the following graphs.



(a) Civilian population aged 15 years and over.

Source: Australian Labour Market Statistics, October 2004 (ABS cat. no 6105.0) and Labour Force Survey, Australia, October 2004 (ABS cat. no. 6291.0.55.001).

*FT = full time, PT = part time

40. According to the graphs above, it would be true to say that in August 2003 in Australia:

- The proportion of part time ongoing female employees is lower than their male counterparts in the 40-44 age group if the two populations were roughly the same size.
- There are more full time male employees than female employees in the 35-39 age group if the two populations were roughly the same size.
- It is more difficult to hold onto a full time job for females than it is for males in any age group.
- Part time casual employment is only reserved for teenagers for both sexes.

41. We can conclude from the two graphs that

- There's a dip in the proportion of females in full time ongoing employment in the 35-39 age group due to maternity leave.
- Casual jobs are not as well paid as full time jobs for both males and females.
- Males, unlike females, tend to be employed in full time casual jobs than part time casual jobs.
- A higher number of females continue full time employment after the age of 60 than their male counterparts.

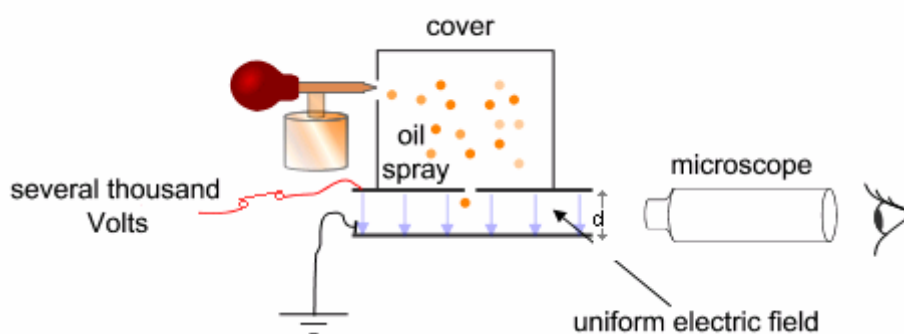
42. Alcohol and pregnancy don't mix. Fortunately, most women who drink cut their consumption dramatically once they realize they are carrying a baby. The number of children who develop the severest alcohol-related effects is relatively small: from 0.5 to 2 per 1000 live births in the US. But doctors still don't know what harm, if any, comes from light to moderate drinking during pregnancy, which is why they caution expectant mothers not to drink at all.

According to the passage, doctors believe that

- Light to moderate drinking is safe during pregnancy.
- Women who are trying to conceive should stop drinking.
- Alcohol's deleterious effects on the foetus range from cognitive problems to severe growth deficiencies.
- The number of children who develop the severest alcohol-related effects is insignificant.

Questions 43-44 refer to the following experiment.

The purpose of Robert Millikan's oil-drop experiment (1909) was to measure the electric charge of the electron. He did this by carefully balancing the gravitational and electric forces on tiny charged droplets of oil suspended between two metal electrodes. Knowing the electric field, the charge on the droplet could be determined. Repeating the experiment for many droplets, it was found that the values measured were always multiples of the same number. This was taken to be the charge on a single electron: 1.602×10^{-19} coulombs.



43. We can conclude from the passage above that

- a) Millikan's oil-drop experiment attempted to measure the magnetic charge of an electron.
- b) Gravitational forces and electric forces can be balanced to suspend a tiny charged oil droplet.
- c) The charge of two electrons would be 3.204×10^{-18} coulombs.
- d) Plastic electrodes were used to create a uniform electric field.

44. The above diagram shows that

- a) The uniform electric field rotates around the electrodes in an anticlockwise fashion.
- b) The size of the oil droplet is irrelevant to the experimental results.
- c) Several thousand volts are used to create an electric force.
- d) A microscope is used to focus a beam of light onto the oil droplet.

Section 2 Understanding People

Ben has had his eye on Jane for quite some time now. The following passage refers to questions 1-4.

Ben was an only child. Growing up there were not that many kids in the neighbourhood that were about his age. This didn't bother him that much as he was very much into computer games and science experiments rather than kicking a soccer ball around in the backyard. His parents tried to encourage him to join the local soccer team but he just wasn't interested. His parents were mostly worried about the fact that despite being a lovely kid, he didn't seem to have many friends and was content playing on his own. That was not to say that he didn't have any friends at all, they were more worried about his ability to make new friends as he was very shy.

High school came around and Ben's family had just moved suburbs and therefore Ben had to go to a new school without his friends. His parents were worried but Ben seemed to settle in ok. They told him to invite some of his new friends over but he said that they were too busy. They wanted to push the matter further but while he seemed happy they decided to see what happened.

Ben took fancy in a girl called Jane. They had geography and maths together and Jane had even asked Ben to help her with her fractions homework one day. She had long blonde hair and blue eyes and a cute laugh. When she was thinking, she would twist her hair around her pen until she figured out the right answer. Ben offered to help her out anytime with her maths but she said she usually didn't have any problems.

Later in the term, Ben and Jane were sitting having lunch one day. Ben was unable to sit still and his heart seemed to be pounding out of his chest. He had been waiting for this opportunity to speak to Jane alone for some time now but this was the first time he actually made the effort to talk. After thirty minutes had gone by, Ben found himself feeling much better and was chatting with Jane as if they had been friends for years. Ben decided that it was about time he acted upon the feelings he had been experiencing and trying to avoid over the past couple of months. He edged closer to Jane. Moments later Jane stood up, adjusted her skirt and sat back down, further away from Ben than she had been previously. Briskly packing up her things, Jane made an excuse about having to go to the library to check her email.

Later that afternoon, Ben spotted Jane talking to her friend Janine in the corridor. At first he considered approaching her, to make sure everything was ok after what had happened at lunch time. As he got closer, he saw what she was doing. Jane was avidly demonstrating to Janine how someone had moved over along a seat, eyes closed as if wanting to kiss someone. Then together they burst out laughing. Ben knew she was imitating him. At that moment, Janine spotted him in the corridor. This made them laugh even harder. He hoped the floor would just open up and swallow him.

1. Prior to this occasion, the relationship between Ben and Jane can be best associated with which of the following statements:

- a) They had class together but didn't speak to each other
- b) They were acquaintances who only spoke when they had to
- c) They were friends who spent time together outside class because she admired how intelligent and helpful he was
- d) They were friends but this did not extend beyond the classroom

2. How was Ben feeling after chatting with Jane for 30 minutes?

- a) Jubilant
- b) Confident
- c) Relaxed
- d) Nervous

3. The last sentence, "Ben hoped the floor would just open up and swallow him" indicated:

- a) The experience had a negative impact on Ben's self esteem
- b) The experience had a negative impact on Ben's popularity
- c) The experience had a negative impact on Ben's confidence skills
- d) None of the above

4. Following on from this, it is likely that:

- a) Jane will come over and apologise and everything will go back to the way it was because Ben will realise how funny the situation was
- b) Ben will try harder to find another girl to show to Jane that he doesn't need her
- c) Ben will avoid Jane and Janine because he feels too embarrassed to be around them
- d) Only once Janine has left will Jane come over and apologise because she doesn't want to look uncool in front of her friends

The following passage relates to Brittany and her experience with an eating disorder and refers to questions 5-8.

Brittany found it was becoming more and more difficult for her to eat each day without worrying about calories and exercising. Dieting was beginning to consume her life. She spent hours upon hours, researching ways in which she could reduce her body fat and eat less food while still surviving. She was becoming more and more secretive and began hiding food in her room so her parents would not see what she was doing. She knew they would stop her the minute they realised she was starving herself but she knew she had to hide it from her as long as possible. They soon realised and they tried everything to help her. As a last resort, they invited a film crew into their home to help raise funds so Brittany could be sent to a special clinic in America. When the story went to air, Rhonda, a survivor of Anorexia Nervosa wrote to Brittany and told her about her experiences.

As Brittany read the letter from Rhonda, the words became smudged with tears. Brittany began to cry, her parents began to cry and together they held each other. They knew this was not the end, but the beginning of the journey to bring Brittany back.

5. Brittany's behaviour with regards to hiding her meals suggests she was:
- Embarrassed about her inability to eat dinner like everyone else
 - Paranoid her parents would try to stop her from losing weight
 - Concerned her parents would worry about her
 - Afraid her parents would call Today Tonight about her new dieting regime
6. The decision to involve a film crew demonstrates that Brittany's parents were:
- Upset
 - Irresponsible
 - Desperate
 - Anxious and concerned
7. The letter from Rhonda:
- Helped Brittany realise that her family were ganging up against her
 - Encouraged Brittany to go to the clinic in America
 - Showed Brittany's parents that their daughter did not have a problem
 - Helped Brittany realise she was not alone and that there were people able to help her
8. "They knew this was not the end, but the beginning of the journey to bring Brittany back" suggests the parents are:
- Positive about the future
 - Resigned to the future
 - Content with the present
 - Upset about the past

A consultation between a male doctor and Annie relating to questions 9-11.

- Doctor: Hi Annie, what have you come in to see me about today?
- Annie: Oh, nothing too important really
- Doctor: Ok, well how about you tell me about it?
- Annie: Like I said its nothing it's nothing. I think I might have an infection and I just want some tablets
- Doctor: Ok, so where do you think you have an infection?
- Annie: Ummmm Down there

- Doctor: Ok, do you mind if I take a look to see what's going on? I am sure it is just something minor but it would really help me help you if I just took a quick look.
- Annie: Ohh I would prefer not. Can't you just give me some antibiotics or cream?
- Doctor: Unfortunately not.
- Annie: You're a doctor, isn't it your job to treat people. I just need some antibiotics. Can't you do that for me please?
- Doctor: I would be more than happy to write you a script but I really need to make sure that what I am writing the script for will fix the problem. Sometimes unusually problems can mask themselves.
- Annie: Trust me, its nothing unusual, I just want the script!
- Doctor: I could organise a consultation with a female doctor if you would prefer?
- Annie: No no that's not necessary. Look don't worry. I'm pretty busy so it's fine. I'll come back some other time.
- Doctor: Please Annie, at least let me ask you some questions then?
- Annie: You're still going to want to look and like I said I don't have time for that so forget it, it's no big deal anyway

9. Annie is mostly:

- a) Anxious about having to have an examination with a male doctor
- b) Upset with the doctor's approach to this topic
- c) Embarrassed by the nature of her condition
- d) Afraid of other people hearing of why she went to the doctors

10. The doctor:

- a) Made the patient feel more comfortable
- b) Tried to make the patient feel more comfortable
- c) Made the patient feel more uncomfortable
- d) Made no attempt to address the patient's concerns

11. The comment by Annie, "You're a doctor, isn't it your job to treat people? I just need some antibiotics. Can't you do that for me please?" indicates:

- a) She was pleading with the doctor in the hope that he would just give in
- b) She was getting angry with the doctor for not listening to her
- c) She was shocked that he just wouldn't give her what she wanted
- d) She was trying to show the doctor she knew what she was talking about

The following story refers to questions 12-14

"Learning to walk again is hard--the hardest thing I've ever had to do," says Howard who was virtually paralysed in a motorcycle accident last December. Howard remembers little about the accident -- except excruciating pain. Nor does he remember much about the trip to hospital where doctors determined that he had suffered an "open book" pelvic fracture, crushed lumbar vertebrae, bone shards imbedded in his spinal cord, and a ruptured bladder.

The prognosis at that time, was about a year in a wheelchair at best, more likely a lifetime. Nevertheless, Howard was determined to walk again, and he even imposed a deadline upon himself. "I had a movie I wanted to make," he says. "That was one of reasons I wanted to get going on rehab. A carrot put in front of you is real important" So he decided to take charge of his own recovery. "I decided that as long as I wasn't damaging anything, I would push myself to get back on my feet. I had things I needed to do."

Slowly, Howard Rutman learned to roll over and get in and out of bed, maneuver himself into and out of a wheelchair and car, and -- using a transfer board -- a bathtub. He also had to learn to put on a special fiberglass shell, designed to keep his pelvis and spinal cord immobile while they healed. "I didn't have to wear it in bed, but I had to strap my 'turtle shell' on before I got out of bed. I had to learn to roll onto my side, get up on my hands, creep my feet over to the edge of the bed and ease my feet down slowly. If I went too fast, the jarring hurt my back and pelvis." It took me a while to get this right.

After two months on his back, the determined Howard was mobile again, and he was released to a halfway house, really a minimum care facility, where he continued to push himself to the limit before being able to go home. "Learning to walk was tough. I had no coordination in my left foot, and I was still pretty numb from the waist down," he remembers. I'd put a piece of paper in front of my foot and try to hit it with my toes."

After a few therapy sessions at home, Howard decided his therapist wasn't making him work hard enough. "I sat him down and said, 'When you walk out of here I want to be puffing and sweating. My goal is to be able to walk down stairs in a week-and-a-half.'" And sure enough. Soon he could do it, using a four point cane. Then he started walking with a walker/chair around the block in agonizingly slow increments -- shuffling carefully and cautiously from driveway to tree to fence, etc. "When I got tired I sat in the chair," he says. "I tried crutches, but realized I could support myself just as well with the cane, and the crutches got in the way. I decided I'd just walk through the pain, as long as I wasn't hurting myself physically. I used the cane for two or three months until I realized I was spending all my time looking for it, and now I don't use it at all."

So what's the prognosis? "The neurosurgeon originally thought it would take me a year to get back on my feet," says Howard. "But I walked into his office in May -- that was about five months after the accident" Howard concludes.

12. The phrase, "A carrot put in front of you is real important" refers to:
- An image of himself being able to walk again to be used as a motivation tool
 - A goal he wanted to achieve which he used to motivate himself to work through his rehabilitation program
 - Having a healthy appetite is important in becoming physically fit again
 - Making sure you keep your eyes focused on the future and not on the past
13. Howard's attitude to the rehabilitation process could be described as:
- Positive and encouraging
 - Supported and determined
 - Determined and happy
 - Motivated and positive
14. What has Howard learnt from this experience:
- Persistence and hard work pays off
 - Doctor's make mistake and should not be trusted as he was walking much sooner than what he was told
 - Whatever you put your mind to, you will be able to achieve 100% of the time
 - The support of other people is critical to improve

An interview between Gary and a student relating to questions 15-18

Student: Can you tell me more about what you were saying in terms of the arthritis taking over your life, what sort of impact has that had?

Gary: Well, it has restricted you from doing things (right). I was very active you know. I used to always play tennis, bowls and everything like that, but once I got the arthritis I just couldn't do anything like that.

Student: So it became very difficult for you to participate in the activities that you found important?

Gary: Oh, yes.

Student: And how did that make you feel at the time?

Gary: Terrible. It took me a long time to accept what was happening. I was always been outside, outside doing things (mmhm). Playing me bowls, playing tennis and all that and when I got this it restricted me from doing it (mmhm) as much as I used to do, but now I can't do anything like that at all.

Student: I understand, so it must have been hard for you to have to reduce the activities you seem to love?

Gary: Oh yeh ... (sigh) but life goes on I suppose

15. The student can be described as:

- a) Empathetic and polite
- b) Understanding and concerned
- c) Nervous yet grateful
- d) Understanding yet distant

16. Gary's third comment indicates:

- a) He was in denial for a period of time
- b) He was frustrated at the changes he had to make
- c) He understood what he had to do
- d) He did not understand what was happening to him

17. "Oh yeh ... (sigh) but life goes on I suppose" indicates Gary is:

- a) Resigned to his condition
- b) Positive about his condition
- c) In denial about his condition
- d) Negative about his condition

18. Gary appears to be:

- a) Reluctant to reveal too much information
- b) Unable to express his true feeling
- c) Very willing to express his true feelings
- d) Nervous talking to the student

The following passage refer to questions 19-21

I was born with cerebral palsy which has made it hard for me to walk and talk. I have learnt to manage pretty well however I will never know what it is like to be an "average" person. When I say something intelligent I see people look at me in disbelief.

My parents have been great. They try to pretend everything is not out of the ordinary. But I'm not naïve. I can see that when situations like the one in the restaurant happen they don't know whether to bite their tongue or reply rudely. I am sure they wish that we could go out be like everyone else and not have to worry about these sort of things. They often suggest we just get take away, not because they are embarrassed of me, I know they are not, but because they don't want me to feel any different. It's ok though. I told them I am happy with who I am!

19. The word “average” has been placed in inverted commas. This is to demonstrate:
- The author wishes he was what society perceived to be normal
 - The author does not know what normal means because he has been brought up in a sheltered world because his parents did not want him to feel different
 - The author feels normal but knows that he does not fit in with society’s definition of normal
 - The author wishes people would not use terms such as normal as they are discriminatory towards people such as himself
20. The parents of the author see their son as:
- An unwanted part of their life
 - A person who they need to protect from the cruel comments and beliefs of society
 - A person who they want to shelter from society yet want to lead as normal life as possible
 - A person who needs constant support
21. “When I say something intelligent I see people look at me in disbelief”. Why does the boy get this reaction when he speaks to strangers?
- They expect his physical disability must also affect his mental abilities
 - They are amazed at his tenacity to act like a normal teenager
 - They are inspired by his determination
 - They are surprised that he is not slurring his speech

In the following passage, Joe and Anita reveal how they feel about coming home with their new baby and refers to questions 22-25

Joe and Anita are about to bring their first baby home for the first time. The birth had gone smoothly and over the past 5 days in hospital they had learnt everything from bathing to feeding and how to settle down baby Amanda. Initially Joe was finding it difficult to bond with the baby and felt that he wasn’t going to be a good father. He longed to be like Anita who seemed to naturally know what to do with children. He voiced this concern to Anita who told him not to worry, it will happen.

Now the time had come to go home and they had mixed emotions. They thought this would be the happiest moment and it was, but at the same time they enjoyed having the nurses around 24 hours a day.

Anita: What if once I go home I am unable to settle her. I know you have taught me everything but what if all that fails? Does that make me a bad mum?

Nurse: Of course not. Many mums and dads find settling in with a new baby difficult at times but that doesn’t make you bad parents. You will find that over time, things will get easier. If you are ever worried, I can give you the number to our help line which will put you through to a nurse who can answer any questions you may have.

22. Joe and Anita's relationship can be best described as:
- a) Open and trusting demonstrated by the way in which Joe felt comfortable discussing his concern with Anita
 - b) Caring and supportive demonstrated by the way Anita was there for Joe when he needed her
 - c) Positive as they working together to help each other as they learn what they need to do with the new baby
 - d) Not enough information
23. Why did they enjoy having the nurses around in hospital?
- a) It gave them a sense of pride that they could show them the knew how to take care of their little girl
 - b) It allowed Anita to relax while the nurses took care of Amanda
 - c) The nurses prepared all Anita's meals for her which was good because she doesn't like cooking
 - d) It gave the couple a sense of security knowing there was always someone available to help if they needed it
24. In her response, the nurse has:
- a) Not addressed the parents concerns
 - b) Acknowledged the parents concerns but has not done anything to help
 - c) Responded effectively to the parents concerns
 - d) Made the parents feel bad about feeling concerned
25. As a result of the nurse's response, the parents are likely to feel:
- a) Empowered
 - b) Relieved
 - c) Grateful
 - d) Anxious

In the following passage, Audrey has terminal lung cancer and refers to questions 26-28

Audrey, an 85 year old lady, suffering from terminal lung cancer, has been admitted to a palliative care ward. Her pain has been increasing over the past month and she now has very little time left. The doctor on the ward has increased her morphine, a pain medication. Slowly, Audrey begins to lose consciousness. Audrey's daughter and son are concerned that by continuing to increase the morphine, Audrey will die quicker and that it is unnecessary to keep increasing the dose.

Doctor: Audrey does not have to be in any pain at this point of her life and the morphine ensures she will be able to die peacefully.

Daughter: But it is killing her, she doesn't even open her eyes anymore.

Son: I have heard that this is a way doctors get rid of dying patients faster

Doctor: That rumour is not true let me assure you. It has been well researched that increasing pain medication will not hasten the death of your mother.

Note: Palliative care is a ward dedicated to the care of dying patients and their families

26. The doctor's intention lie with helping:

- a) The patient
- b) The hospital
- c) The family
- d) Himself

27. Audrey's son:

- a) Has shaped his views on the doctor according to his own judgment
- b) Has shaped his views on the doctor according to the judgment of other patient's who have had the same doctor
- c) Has shaped his views on the doctor according to the perception of palliative care doctors in the community
- d) Is uncertain as to whether or not he trusts the doctor

28. The doctor's second response is likely to:

- a) Increase the concerns by the son and daughter
- b) Reassure the son and daughter of all the concerns they may have
- c) Reduce the apprehension the son and daughter may have
- d) Encourage the son and daughter to find another doctor

A person reflection relating to questions 29-30

I was in the shopping centre yesterday and there was a boy in a wheelchair and he was with his dad. His dad went into a shop and his son tried to go in but the wheelchair wouldn't fit through the door. So he had to wait outside for his dad. The boy kept trying to get through the door but no one was helping him. Eventually the boy gave up and I went over to see how he was. He just shrugged his shoulders and wheeled himself away. I think we should get wider doors for every shop.

29. The boy appeared to be:

- a) Determined to get through the door
- b) Embarrassed by his wheelchair
- c) Dejected by the way no one would help him
- d) Understanding of other people being in a hurry

30. He just shrugged his shoulders and wheeled himself away. The reason for this is likely to be:

- a) The boy is used to facing difficulties in life
- b) The boy was too tired to try anymore
- c) The boy was scared he might hurt himself
- d) The boy was upset and did not want to talk about it

A personal account by Stephen and Nicholas relating to questions 31 – 34.

Stephen and Nicholas were trapped in the wreckage of the car after a terrible head on collision one night. Unable to get out of the car and get help, they had to wait until someone came along the road. It was late at night and they had been driving for over 4 hours. In this time, they were lucky to have seen 4 or 5 cars go past them. Stephen was in pretty bad shape and Nicholas had to use all his strength to help Stephen free himself enough to breathe as he was trapped under the dashboard.

Stephen: There was a stage where I felt I was on my last breath, I was being crushed. I couldn't feel my legs and I was vomiting. That's when I shut my eyes and saw a picture of my wife and kids and thought to myself, "I can't let myself die here".

Nicholas: It was the first time I stopped and looked back, wishing I had done a lot of the things I had always put off doing. I then realized how much we had to lose and knew we had to hold on. Finally someone found us and I feel like I have been given a second chance of life. I am going to grasp it and live it to the full.

Stephen: I am so glad everything worked out ok but it has been tough because it finally made me realize just how mortal I am.

31. Stephen's first comment indicates:

- a) His concern for what would happen if he was to not survive the accident
- b) His regret for not saying goodbye to his wife and family
- c) He had a vision that this was not his time to go
- d) His determination to stay strong and survive for his family

32. Stephen's first comment had the following effect on Nicholas:

- a) It made him think and reflect on his life
- b) It gave him the desire to hang on for he realized how much he had to lose
- c) It made him realize the severity of the situation
- d) It made him closer to his brother

33. Fill in the blank, Nicolas is _____ to have been given a second chance of life.

- a) Jubilant
- b) Grateful
- c) Enthusiastic
- d) Satisfied

34. The accident:

- a) Had a positive impact on Stephen's state of mind
- b) Has left him dealing with some psychological issues
- c) Has not had a huge effect on Stephen's day to day living
- d) Has made Stephen depressed

The following scenario refers to questions 35-36

Corinne had been overweight for most of her life. She had dealt with the teasing as a child and the funny looks as an adult every day. She had a close group of 4 friends and had never dated anyone seriously before. She decided one day that enough was enough and enrolled in a weight loss program. About a year later she reached her target weight and felt fantastic. People started taking notice of her and she had guys fighting over her. Her life was full of partying and dancing and she slowly lost touch with her friends. Slowly things started to go wrong, she was fired for turning up to work drunk and she found out her boyfriend was having an affair. Feeling terrible, Corinne looked for someone to turn to and realized she had no one. She tried calling a few of her old friends but their lives had moved on and they found it difficult to treat her as a close friend as she once was. Corinne began to wonder whether anything in her life had any meaning.

35. Corinne's friends:

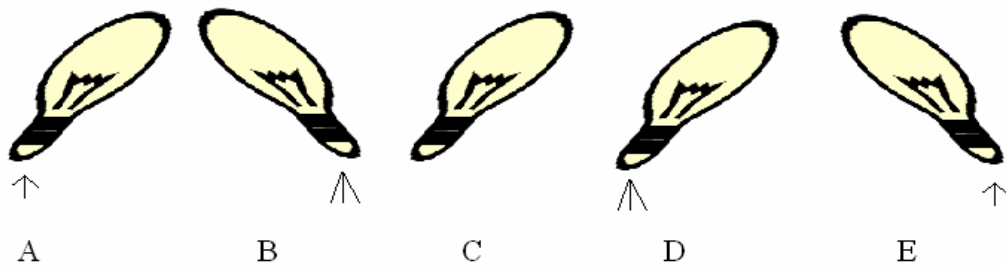
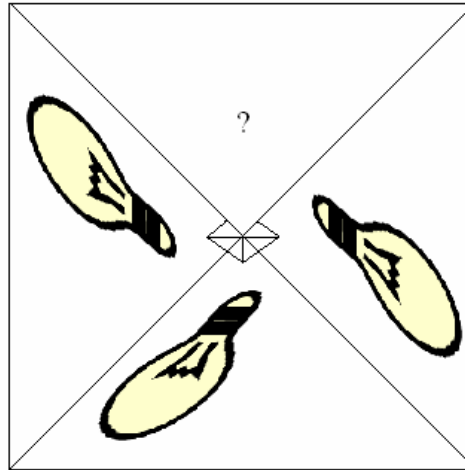
- a) Were jealous of the way in which Corinne was able to go partying all the time
- b) Were concerned over how fast Corinne lost her weight but she wouldn't listen to them
- c) Were annoyed at the way that Corinne would not invite them when she was going out
- d) Felt betrayed by the fact that after being so close to Corinne she now wanted to hang out with 'cooler' people

36. Following on from this, which of the following are likely to happen next:

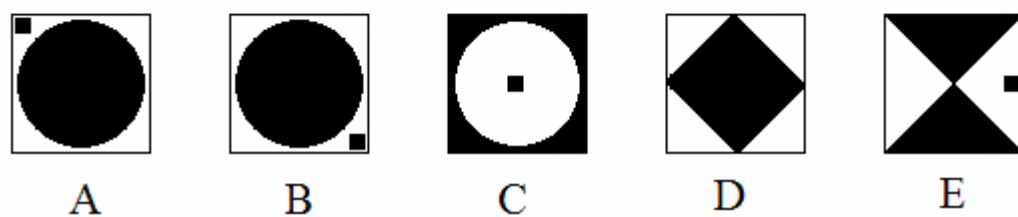
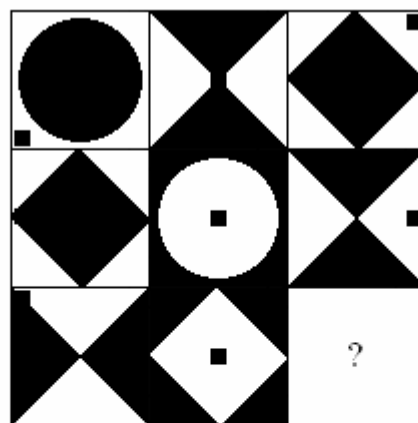
- a) Corinne would go back to drinking and partying in a bid to find some friends
- b) Her friends would realize they made a big mistake by moving on and would help her overcome her problem
- c) Corinne will struggle with her problems but know that she had to make changes, she just didn't know how
- d) Corinne would end up in hospital after being in a car accident while drunk and get help there

Section 3 – Non-Verbal Reasoning

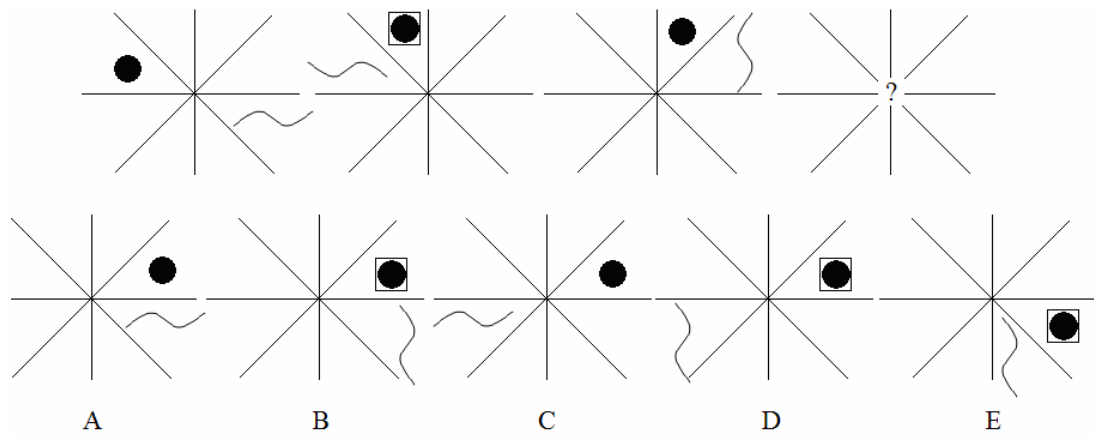
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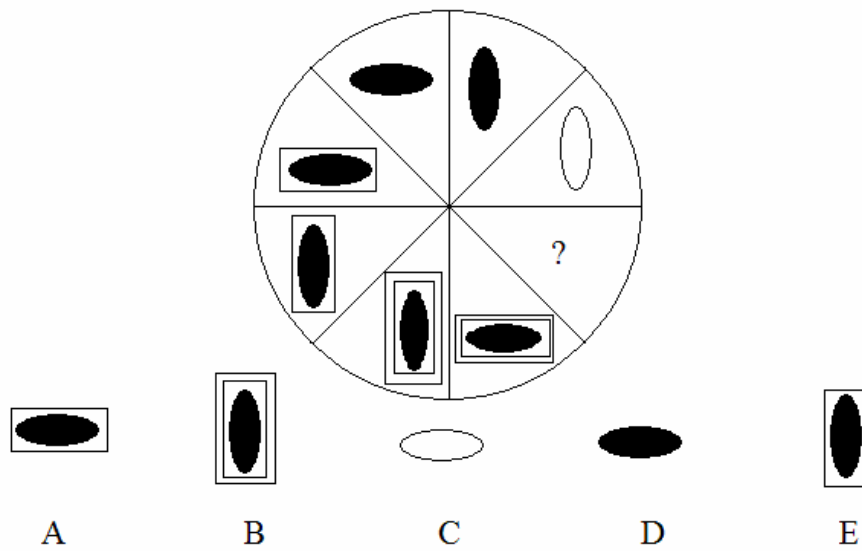
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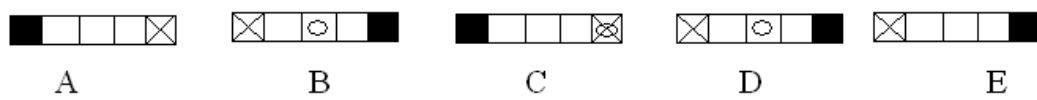
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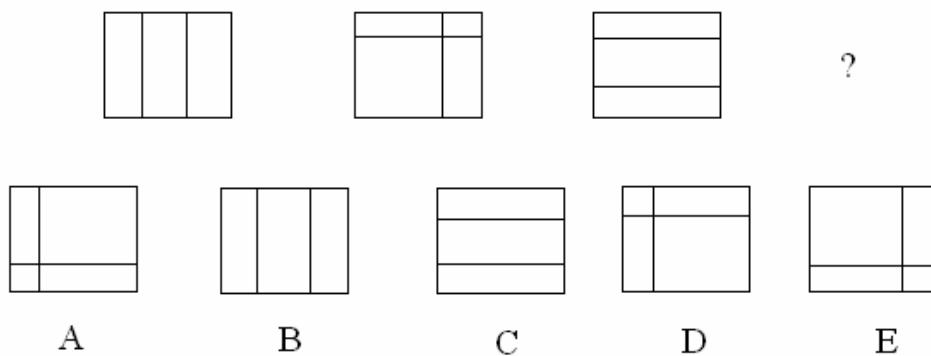
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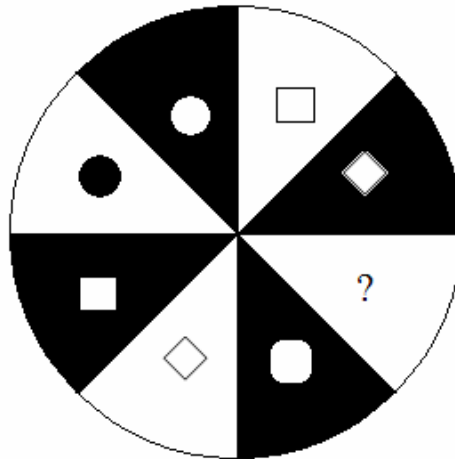
Question 5:



Question 6:



Question 7:



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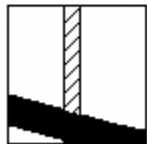
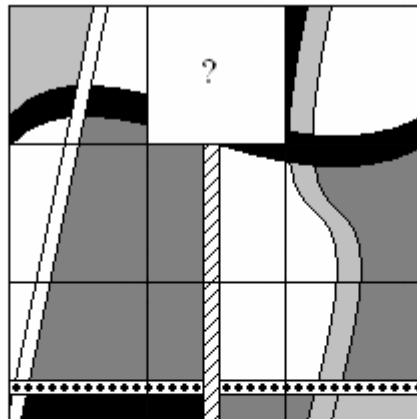
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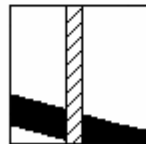
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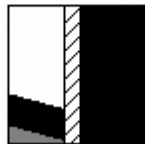
Question 8:



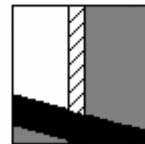
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B



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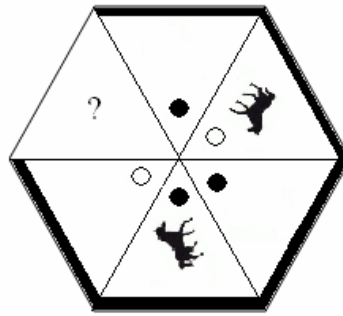


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Question 9:



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B

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Question 10:

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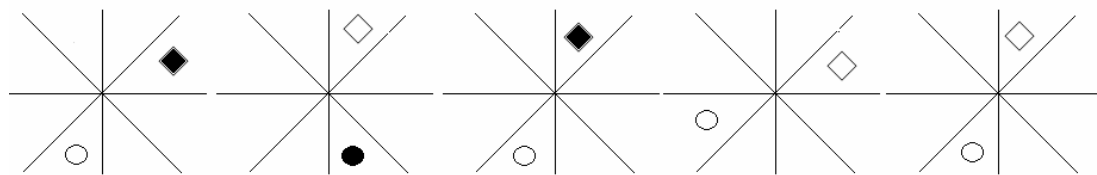
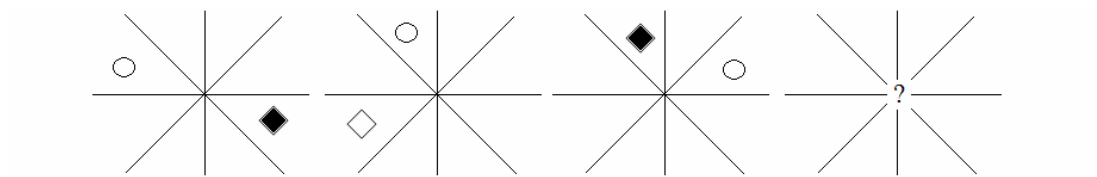
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Question 11:



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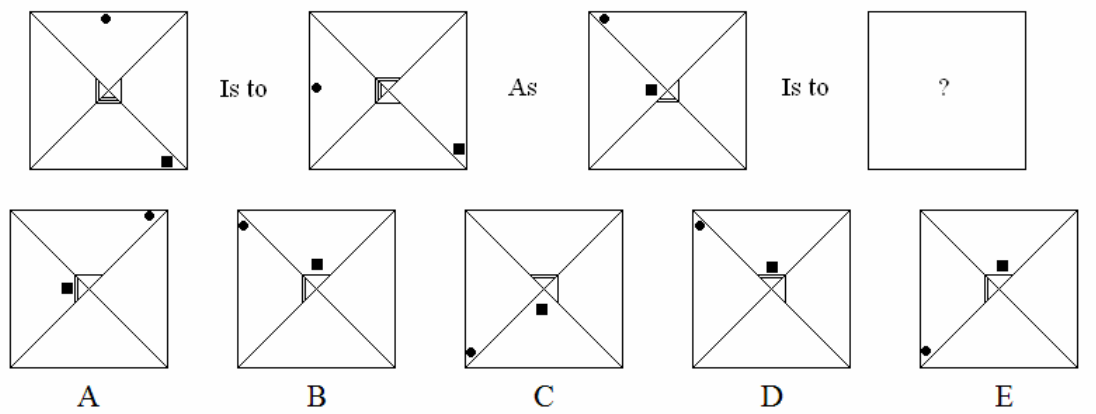
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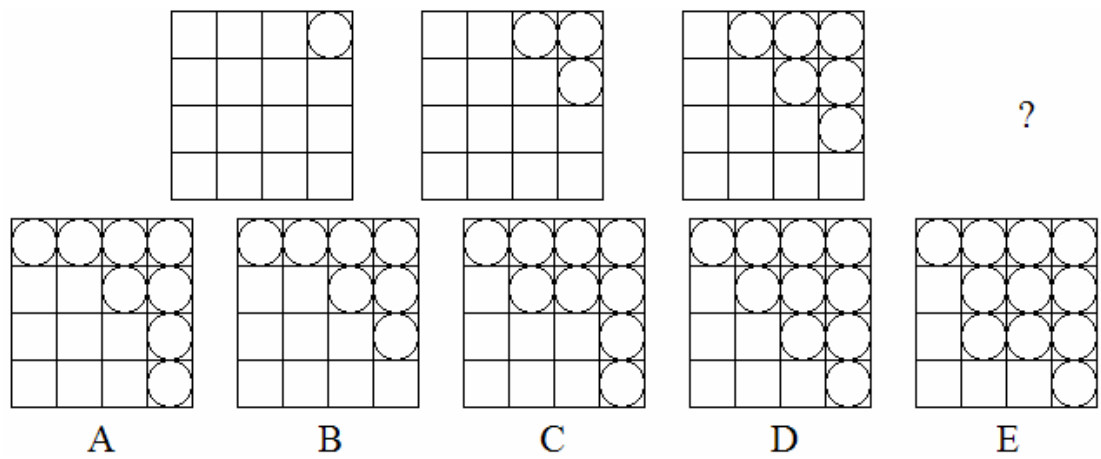
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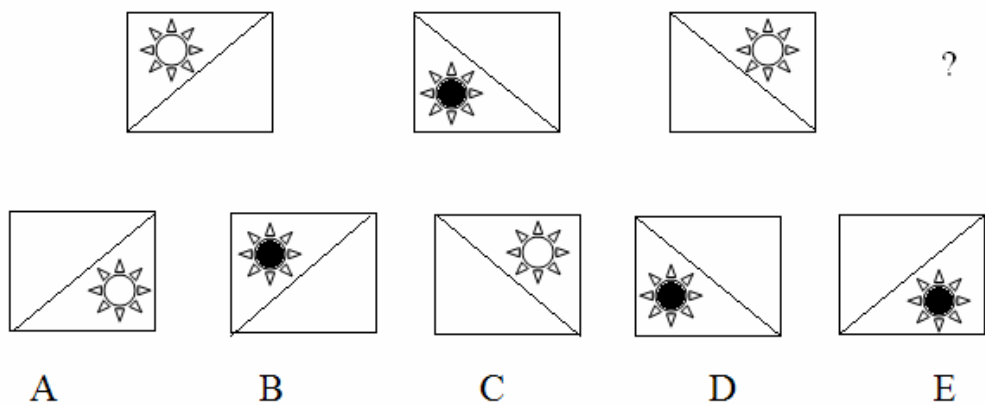
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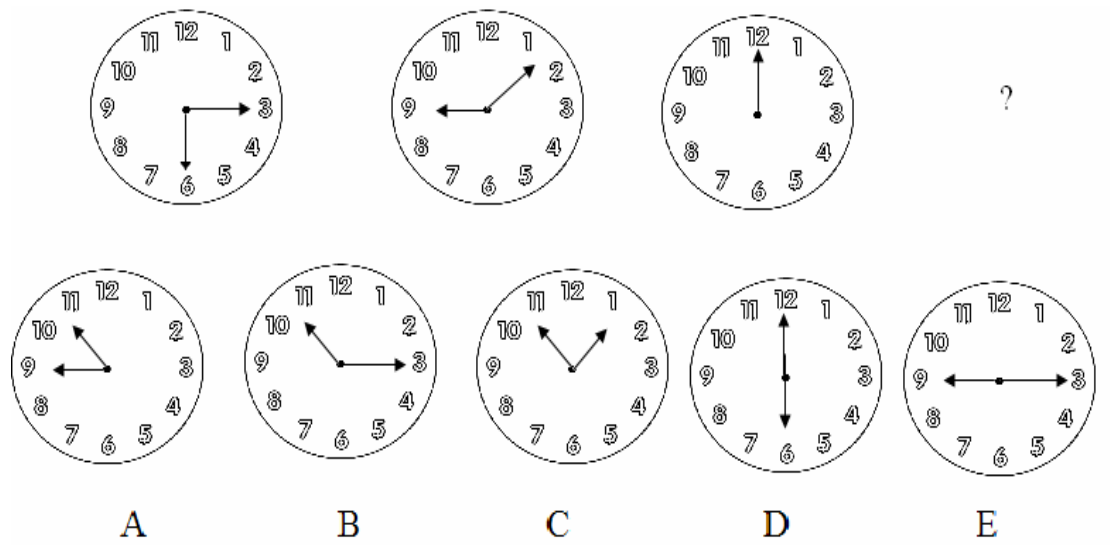
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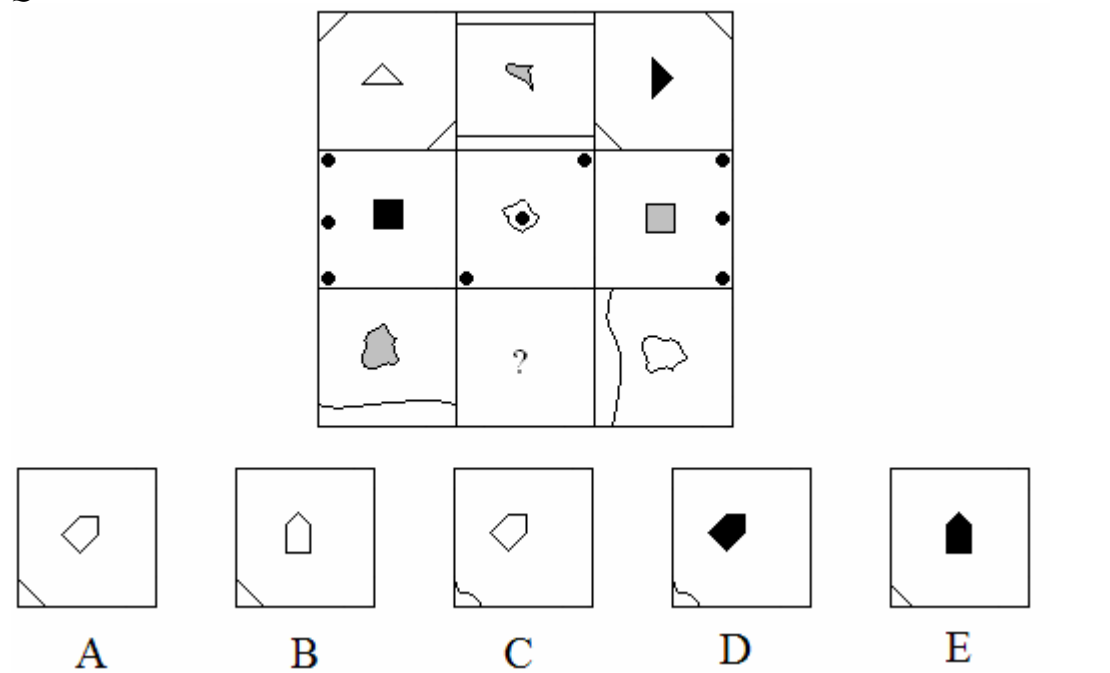
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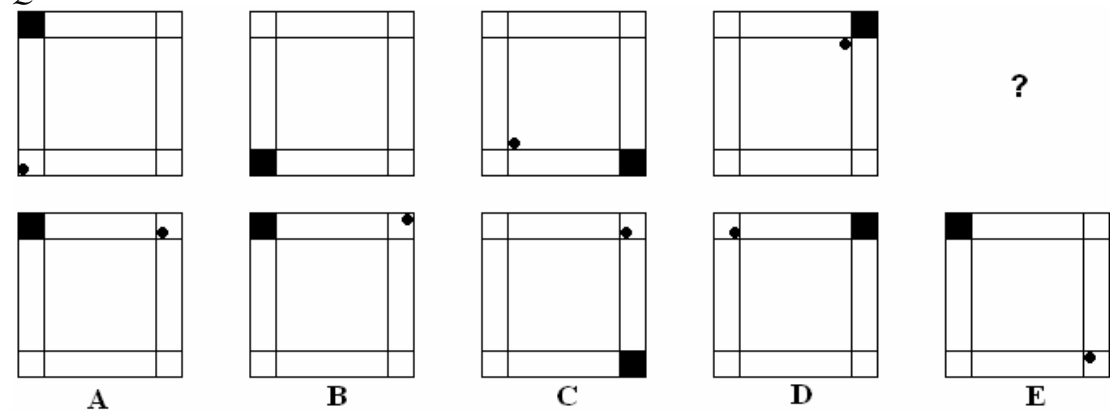
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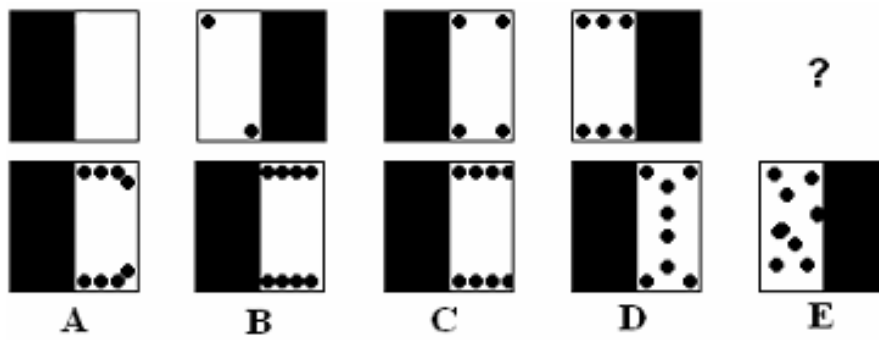
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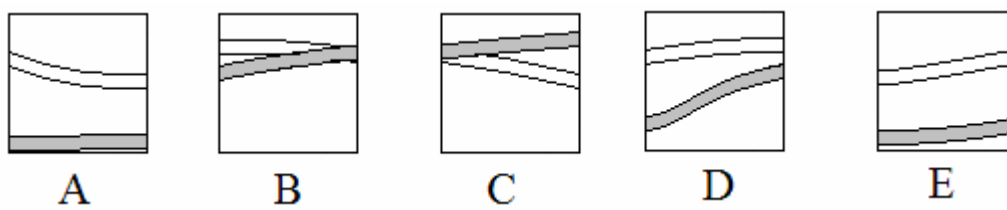
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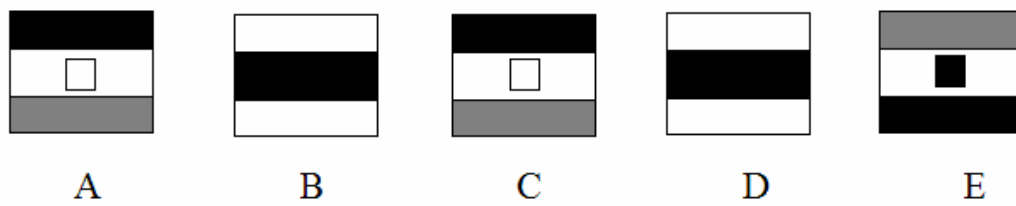
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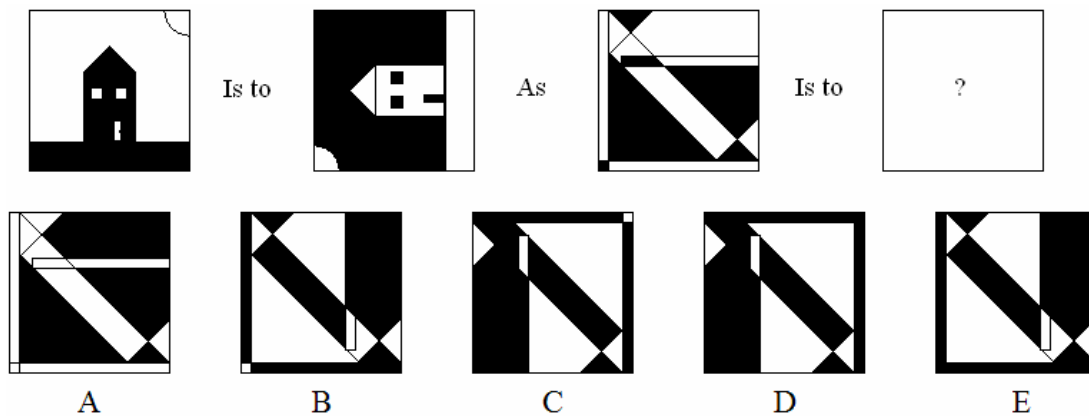
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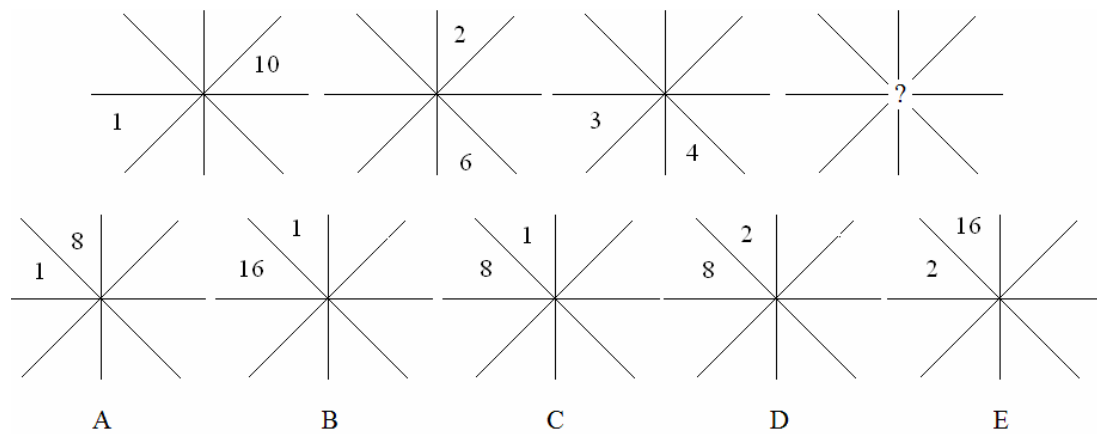
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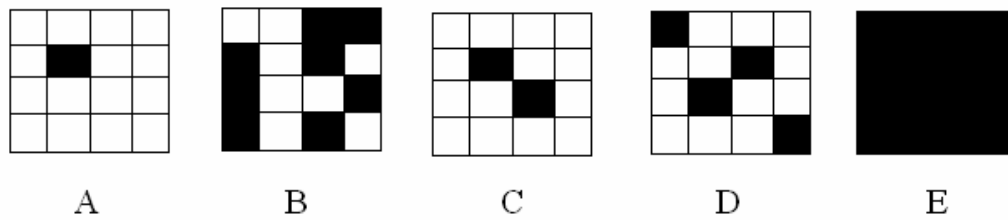
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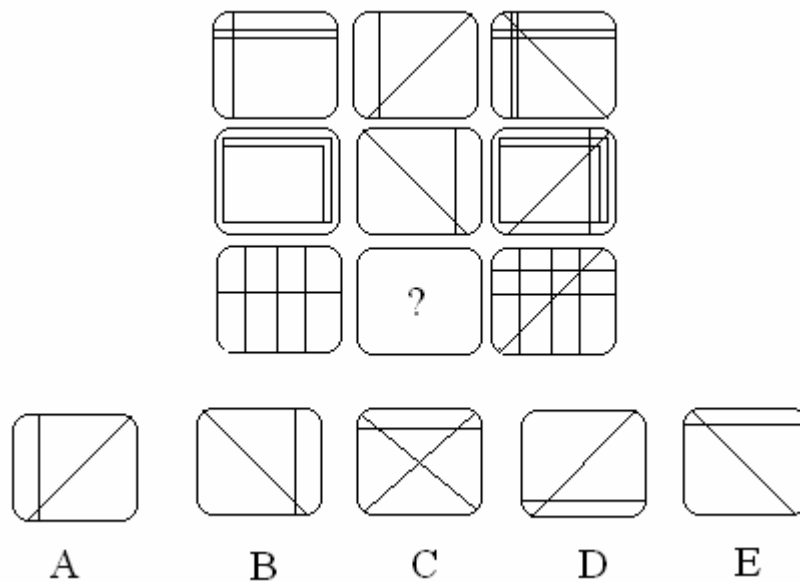
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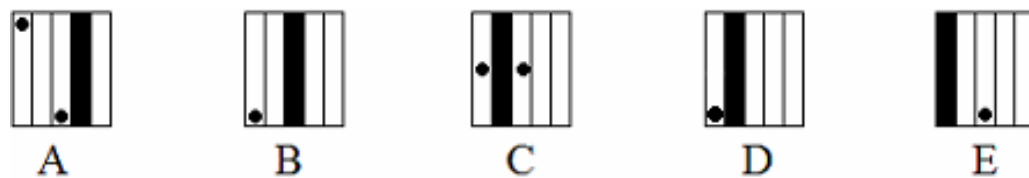
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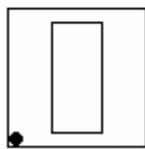
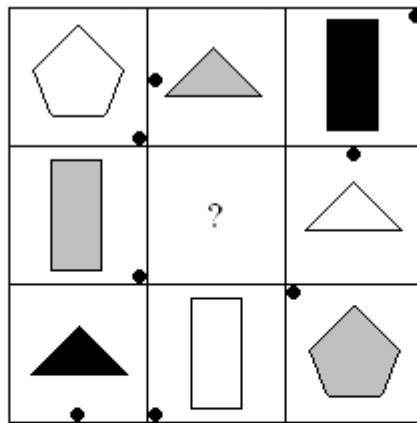
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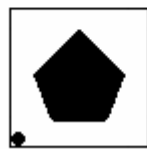
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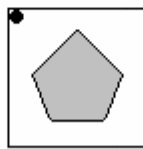
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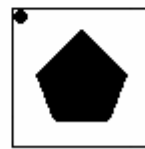
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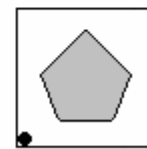
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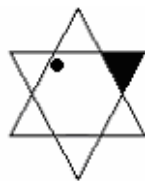


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Question 27:



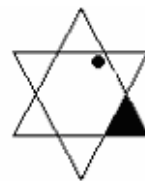
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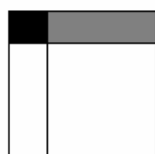
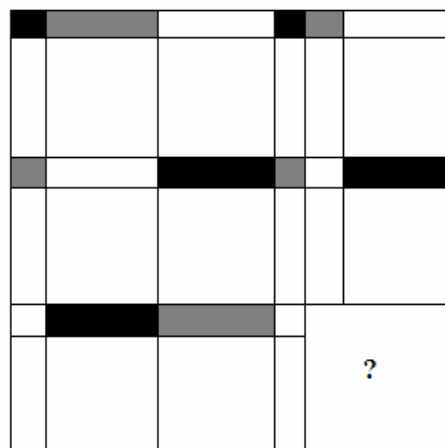


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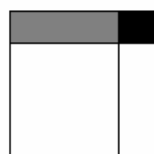


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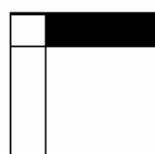
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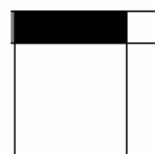
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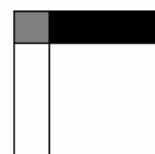
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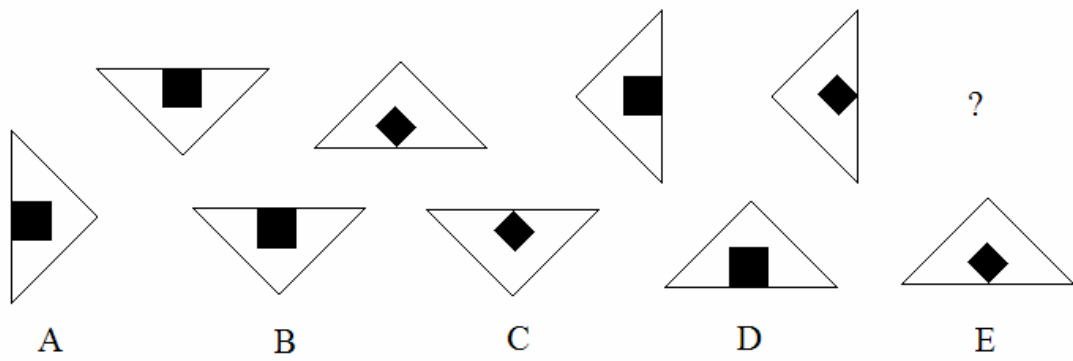


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Question 29:



Question 30:

